

moved inland over the North Pacific States, western Canada, and the northern Rocky Mountain region, and covered those sections during the remainder of the month.

This distribution of pressure caused clear and decidedly warmer weather over the entire district with light dry northerly winds and very low humidity, and developed into a "hot wave" of marked intensity, especially over the northern and central portions of this district. Temperatures equal to or exceeding all previous records for June were reported at a number of stations, and the highest temperature ever recorded occurred at North Head, Seattle, Tacoma, Marshfield, and Sacramento. In this connection it is well to note that the record broken at Sacramento covers a period of 47 years. At the breaking of the "hot wave" numerous thunderstorms occurred in the Plateau region, the Sierra Nevada and mountain regions of southern California.

Fire-weather warnings were issued in California on the 13th, and over the entire district on the 23d, and supplementary advices continued daily until the 28th. These warnings were timely and highly appreciated by interested parties.—*G. H. Willson.*

## RIVERS AND FLOODS

By H. C. FRANKENFIELD

As will be noted in the table following this report, no floods of consequence—except that continuing in the drainage area of the Columbia River—occurred in the important rivers of the country during June, 1925. The scattered rises in Nebraska, Kansas, Missouri, and Texas were due largely to heavy local rains and were attended by no important loss except that of one highway bridge and 2,000 head of cattle along the Nueces River of Texas; the high stages in the lower Rio Grande occurred as part of the great flood reported upon in the May number of this REVIEW; and the Colorado, while still above flood stage at Parker, Ariz., at the close of the month, had caused no flood damage.

There were, however, as results of so-called cloudbursts, a few destructive floods in scattered smaller streams. Of these the most costly occurred in the Delaware River and Big Stranger and Soldier Creeks of northeastern Kansas, where two boys were drowned, and estimated property losses totaling \$1,792,000, exclusive of that to railroads, occurred as follows: Tangible property, \$167,000; prospective crops, \$1,590,000; livestock and movable property, \$20,000; and suspension of business, \$15,000.

Of somewhat similar conditions in Iowa the official in charge of the Weather Bureau office at Dubuque reports as follows:

A series of four heavy rainstorms visited northeastern Iowa from June 11 to 24, resulting in floods which took a toll of 10 lives and cost in damage to property, including livestock, prospective crops, highways and bridges, railway trackage and bridges, and town properties, a total of approximately \$1,888,000.

In this case the greatest single item of loss was \$490,000 in prospective crops, with damage to highway bridges and fills and to railroads each closely approaching that figure. The major part of the damage occurred along the Maquoketa River, where the three hardest-hit communities—Manchester, Dyersville, and Cascade—suffered losses totaling \$450,000.

Another flood of similar character but less destructiveness occurred on the Zumbro River of Minnesota. Newspapers report two casualties in this flood, and losses at from \$100,000 to \$500,000.

As a result of the rainfall shortage in the upper Mississippi Valley during the spring of 1925, which was in many localities the driest spring of record, the Mississippi River fell lower at virtually every gaging station from the headwaters to St. Louis, Mo., than in any previous May or June of record. Below St. Louis the river was generally lower than in any June since 1895. The following table gives comparative stages for the months of May and June:

*Low water in May and June on Mississippi River. Previous records compared with 1925*

	Low water record for month of May		Low water record for month of June	
	Previous record	1925 record	Previous record	1925 record
Fort Ripley, Minn.	3.4, 1924	3.4	3.3, 1924	3.3
St. Paul, Minn.	0.0, 1924	-0.5	-0.4, 1924	-0.6
Red Wing, Minn.	0.7, 1911	0.3	0.3, 1910	0.2
Reads, Minn.	0.4, 1911	0.6	0.2, 1900 and 1910	0.5
Winona, Minn.	3.6, 1921 and 1924	0.8	1.6, 1924	0.8
La Crosse, Wis.	1.8, 1879	0.9	1.3, 1910	0.9
Lansing, Iowa	4.7, 1923	2.1	2.9, 1923	2.1
Prairie du Chien, Wis.	2.0, 1895	2.0	1.3, 1900	1.8
Dubuque, Iowa	2.0, 1879	2.0	1.4, 1900	1.9
Clinton, Iowa	2.9, 1911	2.5	2.1, 1910	2.4
Le Claire, Iowa	1.2, 1895 and 1902	1.3	0.7, 1900	1.2
Davenport, Iowa	1.4, 1895	1.3	1.4, 1900	1.2
Muscatine, Iowa	1.3, 1895	1.9	2.1, 1910	1.9
Keokuk, Iowa	1.0, 1902	0.3	1.1, 1900	0.3
Warsaw, Ill.	2.8, 1895	2.5	3.5, 1887	2.6
Quincy, Ill.	3.0, 1911	1.1	2.6, 1910	1.2
Hannibal, Mo.	2.1, 1902	1.6	2.4, 1895 and 1900	1.5
Louisiana, Mo.	2.1, 1895	1.8	2.2, 1895	1.6
Grafton, Ill.	3.9, 1895	4.1	3.7, 1895	3.7
Alton, Ill.	7.8, 1918	4.9	8.7, 1891 and 1923	5.0
St. Louis, Mo.	5.6, 1895 and 1911	5.6	7.1, 1895	6.0
Chester, Ill.	3.2, 1895	6.4	4.4, 1895	6.5
Cape Girardeau, Mo.	9.4, 1911	9.6	9.8, 1911	9.5
Caro, Ill.	13.6, 1895 and 1911	14.2	9.8, 1895	12.8
New Madrid, Mo.	11.9, 1911	9.8	10.0, 1911	8.0
Memphis, Tenn.	7.0, 1895	10.2	4.4, 1895	6.6
Helena, Ark.	11.0, 1895	14.1	8.1, 1895	8.4
Arkansas City, Ark.	12.4, 1895	18.6	8.0, 1895	9.4
Greenville, Miss.	9.8, 1895	13.1	7.3, 1895	7.0
Vicksburg, Miss.	10.2, 1895	17.3	6.7, 1895	10.6
Natchez, Miss.	21.0, 1915	16.9	10.2, 1911	10.1
Baton Rouge, La.	17.2, 1915	8.8	5.5, 1911	4.8
Donaldsonville, La.	12.5, 1915	6.0	3.6, 1911	3.5
New Orleans, La.	1.2, 1895	2.3	1.0, 1895	1.5

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI DRAINAGE					
	<i>Feet</i>			<i>Feet</i>	
Sulphur: Ringo Crossing, Tex.	20	9	11	25.0	9
Kansas: Bonner Springs, Kans.	18	19	21	18.3	19
Big Blue:					
Beatrice, Nebr.	16	17	17	16.9	17
Blue Rapids, Kans.	20	18	18	20.6	18
Grand:					
Gallatin, Mo.	20	4	5	20.8	4
Chillicothe, Mo.	18	4	6	24.1	6
		17	17	18.3	17
Brunswick, Mo.	10	5	8	11.9	7
		14	22	12.4	19
		29	30	10.4	30
WEST GULF DRAINAGE					
Nueces: Cotulla, Tex.	15	3	7	18.0	5
Rio Grande:					
Rio Grande City, Tex.	15	(1)	3	24.5	2
Mission, Tex.	24	3	5	24.5	3
San Benito, Tex.	21	1	6	24.4	5
COLORADO DRAINAGE					
Colorado:					
Lees Ferry, Ariz.	12	(1)	10	13.5	3
		20	30	13.4	25
Parker, Ariz.	7	(1)	14	8.2	May 31
		24	(2)	7.6	June 28-30
PACIFIC DRAINAGE					
Columbia:					
Marcus, Wash.	24	(1)	(2)	30.4	May 28
Wenatchee, Wash.	40	(1)	(3)	40.8	May 28
Vancouver, Wash.	15	(1)	17	21.5	May 25-28
		22	30	15.6	June 25-28
Pond Oreille: Newport, Wash.	16	(1)	14	19.9	May 31 to June 2
Willamette: Portland, Oreg.	15	(1)	(2)	21.7	May 28

<sup>1</sup> Continued from last month.

<sup>2</sup> Continued at end of month.

<sup>3</sup> Below flood stage at 8 a. m., June 1, 1925.